

Atty. Docket No. CPAC 1017-2
Appl. No. 10/632,549

PATENT

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1. (currently amended) A multi-package module comprising stacked lower and upper packages, the upper said package comprising an upper package die attached to and electrically interconnected to a die attach side of an upper package substrate and the lower said package comprising a lower package die attached to and electrically interconnected to a die attach side of a lower package substrate, each package substrate including at least one metal layer and at least one dielectric layer, and each package substrate being configured to provide electrical contact with a said metal layer at the side of the substrate opposite the die attach side, the module further comprising second-level interconnection solder ball pads at the lower side of the lower package substrate, wherein the electrical interconnections between each said die and said substrate is protected, and wherein the upper and lower substrates are interconnected by wire bonding.
2. (previously presented) The multipackage module of claim 1 wherein at least one said package has wire bond interconnect of the die with the substrate and wherein said wire bond interconnect is protected by encapsulation.
3. (previously presented) The multipackage module of claim 2 wherein the said package is fully encapsulated.
4. (previously presented) The multipackage module of claim 2 wherein the said package is encapsulated only to an extent sufficient to protect the wire bonds between the die and the substrate.
5. (original) The multipackage module of claim 1 wherein at least one said package is a ball grid array package.
6. (original) The multipackage module of claim 1 wherein at least one said package is a land grid array package.

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7. (previously presented) The multipackage module of claim 1 wherein at least one said package has flip chip interconnect of the die with the substrate, and wherein the flip chip interconnect is protected by an underfill.
8. (original) The multipackage module of claim 1, further comprising a heat spreader.
9. (original) The multipackage module of claim 1, further comprising an electromagnetic shield for at least one of the packages.
10. (original) The multipackage module of claim 1, comprising a third stacked package.
11. (withdrawn) A method for making a multipackage module, comprising providing a first package including at least one die on a first package substrate, placing over the first package a second package including at least one die on a second package substrate, and forming wire bond interconnects between the first and second substrates.
12. (withdrawn) The method of claim 11 wherein providing the first package comprises providing an unsingulated strip of packages.
13. (withdrawn) The method of claim 11 wherein placing the second package over the first package comprises applying an adhesive onto an upper surface of the first substrate and placing the second package onto the adhesive.
14. (withdrawn) The method of claim 13 wherein the adhesive is a curable adhesive, and further comprising curing the adhesive.
15. (withdrawn) The method of claim 11 wherein providing the first package comprises testing packages for a performance and reliability requirement and selecting the first package as meeting the requirement.

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16. (withdrawn) The method of claim 11 wherein placing the second package over the first package comprises testing packages for a performance and reliability requirement and selecting the second package as meeting the requirement.

17. (withdrawn) The method of claim 11, further comprising attaching second-level interconnect balls onto the first package substrate.

18. (withdrawn) The method of claim 11, further comprising encapsulating the stacked packages in a multi-package module molding.